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Final Technical Report Grant N00014-97-1-0892 (Project terminated 31 March 1998).

"Accelerated Minority Institution Low Frequency Odontocete Hearing"

We have tested the hearing of bottlenose dolphins, Risso's dolphins, and False killer whales using both the behavioral techniques and the envelope following response evoked auditory potential procedure. We have found a very good correlation between the two procedures. We have attempted to use the otoacoustic emissions technique to examine dolphin hearing but found that it was necessary to further define the sound path to the odontocete ear. Using a voluntarily beached animal we found that there are multiple sound paths to the inner ear.

We are testing the temporary threshold shifts of the bottlenosed dolphin. The animal is trained to station in a hoop device and to go hit a paddle when a pure tone sound is presented. If no sound is presented the animal stays in the hoop station. Either way, correct responses are reinforced. We then start with a comfortable level of sound and gradually reduce its level across trials until the animal makes an error and fails to report the sound. We then gradually increase the sound until the animal once again correctly reports it. This technique establishes the threshold. After the threshold is established the animal is exposed to loud sounds. Although we have played sounds up to 150 dB for up to 20 minutes, the animal has not yet demonstrated a temporary threshold shift.

We anticipate continuing this work with a follow-on proposal.

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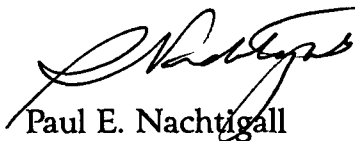
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